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Supplement 2 to

MINERALS OF CALIFORNIA

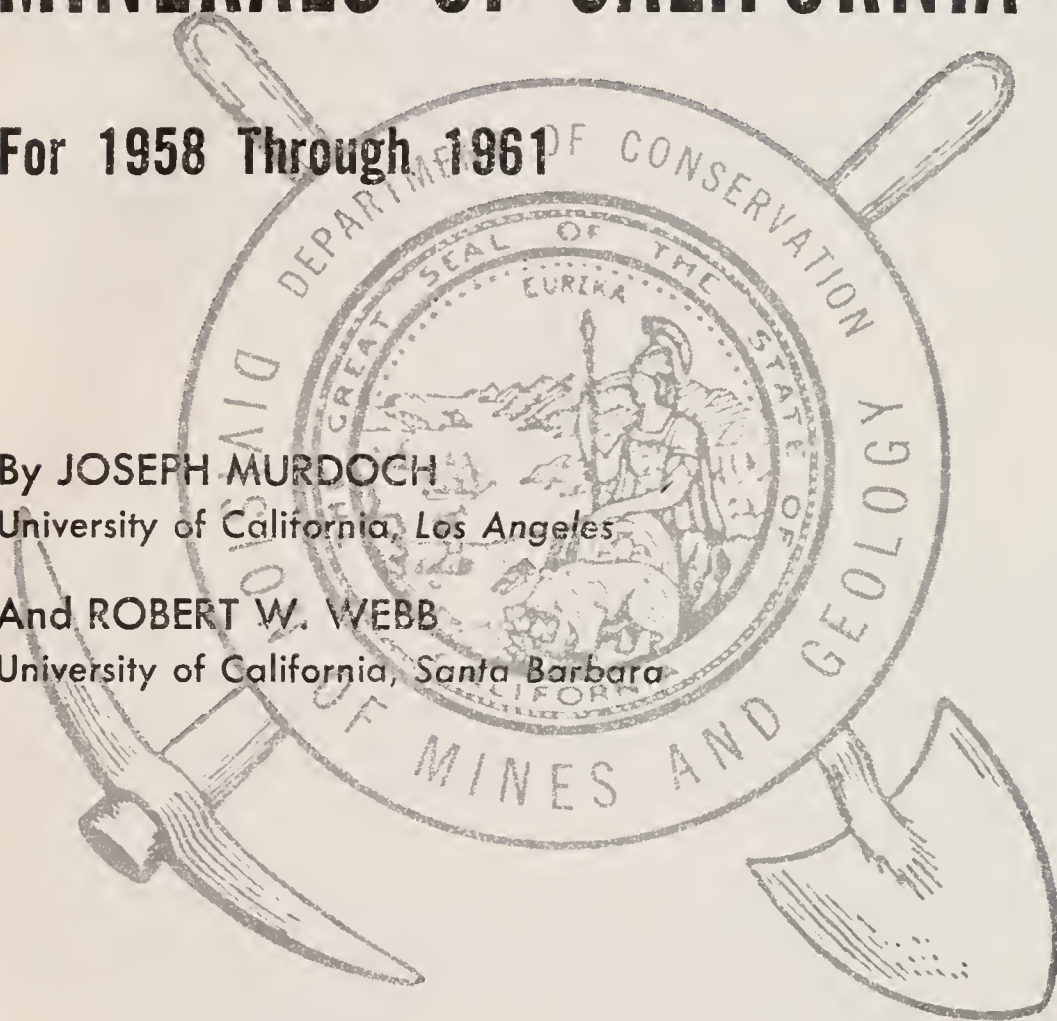
For 1958 Through 1961

By JOSEPH MURDOCH

University of California, Los Angeles

And ROBERT W. WEBB

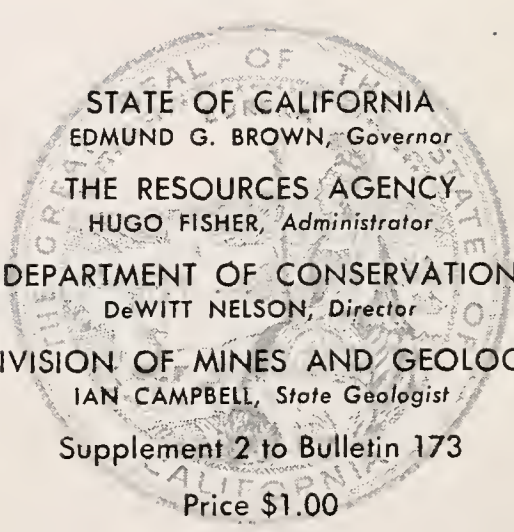
University of California, Santa Barbara



Supplement 2 to Bulletin 173

California Division of Mines and Geology

Ferry Building, San Francisco, 1964

The seal of the State of California is a circular emblem. It features a central shield with a grizzly bear standing on a rock, holding a miner's pickaxe. Above the shield is a banner with the word 'EUREKA'. The shield is flanked by two figures: a Native American on the left and a miner on the right. The words 'THE GREAT SEAL OF THE STATE OF CALIFORNIA' are inscribed around the perimeter of the seal.

STATE OF CALIFORNIA
EDMUND G. BROWN, Governor
THE RESOURCES AGENCY
HUGO FISHER, Administrator
DEPARTMENT OF CONSERVATION
DeWITT NELSON, Director
DIVISION OF MINES AND GEOLOGY
IAN CAMPBELL, State Geologist
Supplement 2 to Bulletin 173
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PREFACE

The California Division of Mines and Geology has maintained as up-to-date coverage as possible of the occurrence of minerals in California, and has reported new data as often as is practicable to users of mining and mineral information. The volumes of Minerals of California that have been published at intervals over nearly 100 years begin with the first volume, by W. P. Blake, in 1866 (reference Blake (9), Bull. 173), and have been supplemented since by pamphlets and volumes covering subsequent years. The most recent volume, published in 1956 (Minerals of California, Bulletin No. 173) with data through December 31, 1954, has been expanded by Supplement No. 1, with occurrences reported between January 1, 1955 and December 31, 1957. The present Supplement No. 2 covers the quadrennium January 1, 1958 through December 31, 1961.

In the four-year period, seven new minerals have been described from California:

1. Gowerite, 1959
2. Haiweeite, 1959
3. Metahaiweeite, 1959
4. Nobleite, 1961
5. Redledgeite, 1961
6. Schuetteite, 1959
7. Tunellite, 1961

In the same period two new minerals were described first in California and were named for scientists who are active workers in the geology and mineralogy of the state: Nobleite (for Dr. Levi F. Noble, of the United States Geological Survey and long-time resident in California), and Tunellite (for Dr. George Tunell, Professor of Geology of the University of California, Riverside—formerly at Los Angeles). Another mineral, "Woodfordite", was named for Dr. A. O. Woodford, Professor of Geology Emeritus of Pomona College but was later found to be ettringite.

In addition, 23 minerals are new to the California record. This seems to be a record number of new minerals (30 in all) for the period involved. Noted for the first time in this Supplement are:

- | | |
|-------------------------|--------------------------|
| 1. Andorite (1958) | 13. Libethenite (1959) |
| 2. Attapulgitite (1959) | 14. Matildite (1958) |
| 3. Boltwoodite (1961) | 15. Mottramite (1961) |
| 4. Clausthalite (1958) | 16. Olivenite (1958) |
| 5. Cyanotrichite (1957) | 17. Paraveatchite (1956) |
| 6. Digenite (1959) | 18. Pyroxmangite (1961) |
| 7. Ettringite (1960) | 19. Sborgite (1961) |
| 8. Fluoborite (1958) | 20. Sternbergite (1961) |
| 9. Guanajuatite (1958) | 21. Sylvite (1961) |
| 10. Homilite (1958) | 22. Wairakite (1958) |
| 11. Huntite (1961) | 23. Weeksite (1960) |
| 12. Jordisite (1960) | |

California's mineral record is expanding as the need for new mineral resources increases. In the period covered by this Supplement, it is interesting to note that many of the newly reported minerals come from re-examination of old mining properties. Restudy of Darwin silver-

lead properties contributed several new specimens; as always, Crestmore continues its contribution of new minerals; and, foremost in contributing new finds are the restudies of boron-bearing areas, especially Death Valley, and Boron (Kramer borate district). It appears likely, as intensive studies of boron areas continue, that many other new minerals will be reported. The reports of new radioactive minerals, noteworthy for their abundance in the 1955-57 Supplement, are few, suggesting declining emphasis in prospecting for uranium and rare-earth-bearing compounds.

Errors and inaccuracies in previous editions of Minerals of California have been noted by the using public, and the compilers are grateful for this vigilance. Continued queries by all who refer to the Bulletin and its supplements will be appreciated. Comments may be addressed to the State Division of Mines and Geology, or to either of the undersigned.

Joseph Murdoch
University of California, Los Angeles
Los Angeles 24, California

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Santa Barbara, California

December 15, 1962

HISTORICAL AND GEOLOGICAL SKETCHES

CRESTMORE

Crestmore, Riverside County, general reference Murdoch (38) ; Burnham (1).

DESCRIPTION OF MINERALS AND MINERAL LOCALITIES *

ALLANITE

Kern County: 1, Allanite is reported as a minor constituent of pegmatite dikes in the Kern River uranium area, MacKevett (2) pp. 191, 197.

ALLEGHANYITE

Amador County: 1, Alleghanyite occurs with tephroite and other manganese minerals at the Germolis prospect near Fiddletown (SE $\frac{1}{4}$ sec. 9, T. 7 N., R. 11 E., M. D.) Hewett et al. (6) p. 49. 2, Alleghanyite is reported from the Lubanko prospect (SE $\frac{1}{4}$ sec. 10, T. 7 N., R. 11 E., M. D.) Hewett et al. (6) p. 49.

ANDORITE

Lead, silver, antimony sulfide, $PbAgSb_2S_6$

Orthorhombic. Crystals stout prismatic and striated, or thick tabular. No cleavage. Metallic luster. Color dark steel-gray; sometimes tarnished yellow or iridescent. H. 3-3 $\frac{1}{2}$. G. 5.35. Fusibility 1. Soluble in HCl with separation of S and Sb_2O_3 .

Inyo County: 1, Thin tabular crystals of andorite in the rich silver ore of the Thompson mine, Darwin district, are reported by Hall and MacKevett (1) p. 17.

ANNABERGITE

Santa Cruz County: 1, Annabergite carrying zinc is reported from the Pacific Limestone Products (Kalkar) quarry, as small, well-formed crystals, as well as fibers, E. H. Oyler (p.c. '59).

ANTIMONY

Riverside County: 1, Antimony is reported from "South Riverside", E. S. Dana (7) p. 133.

* Author's Note:

This supplement follows the same system of listing references and occurrences as used in Bulletin 173 and Supplement No. 1.

Species first discovered in California are marked by an asterisk (*), and followed by the date of the first published description (e.g.: * Nobleite, (1961)).

Minerals new to the California record in this Supplement have brief mineralogic data paragraphs (e.g. Andorite); mineralogic data for all other minerals listed are in Bulletin 173 or Supplement No. 1.

Occurrences are listed after the county name, preceded by a *bold face* number indicating whether it is the first, second, third, etc., occurrence to be reported in that county, also considering occurrences reported in Bulletin 173 and Supplement No. 1 (e.g.: Inyo County 1 . . . ; San Bernardino County: 3 . . .).

References for each reported occurrence (e.g. Murdoch (38) ; Burnham (1)) are listed alphabetically in the "References" section at the end of this Supplement, continuing the list in Bulletin 173 and Supplement No. 1. Specimens in the mineral exhibit of the California Division of Mines and Geology are denoted by CDMG followed by the acquisition number (e.g. CDMG (21752)), corresponding to S.M.B. plus acquisition number in Bulletin 173 and Supplement No. 1.

ANTLERITE

Inyo County: 1, Antlerite is listed by Hall and MacKevett (1), p. 16, as one of the supergene minerals identified from the Darwin district.

Madera County: 1, A specimen of antlerite, CDMG (21752) in the Division of Mines & Geology Mineral Exhibit, is from the Buchanan mine near Knowles.

APHTHITALITE

Inyo County: 1, Aphthitalite is reported as saline crusts and efflorescences from Deep Spring Lake, B. F. Jones (1) p. B200.

ARAGONITE

San Bernardino County: 3, Aragonite is reported from Holcomb Valley north and east of Big Bear Lake, Berkholz (19).

ARTINITE

San Benito County: 2, Artinite is reported from the Alpine mine, CDMG (21729) (21750). *3*, It also occurs as fibrous aggregates on serpentine from the vicinity of the Florence Mack mine, E. H. Oyler (p.c. '59). *4*, Artinite is also found on Clear Creek, E. H. Oyler (p.c. '59), CDMG (21730).

Fresno County: 1, Artinite occurs in fine tufts on serpentine rock along White Creek east of Condon Peak, C. A. Noren (p.c. '60).

ATTAPULGITE

Hydrous silicate of magnesium, iron, calcium, aluminum,
near $X [9\text{SiO}_2 \cdot 6(\text{MgFe}''\text{Ca})\text{O} \cdot 12\text{H}_2\text{O}] + Y [9\text{SiO}_2 \cdot 2(\text{AlFe}''')_2\text{O}_3]$
(Attapulgitic if X is greater than Y , Sepiolite if Y is greater than X).

Monoclinic. Soft, clay-like. G. 2.06-2.30.

Kern County: 1, Veins in sediments in the Four Corners area have been identified as the clay mineral attapulgitic, associated with montmorillonite, Droste and Gates (1).

San Bernardino County: 1, Veins in sediments in the Four Corners area have been identified as the clay mineral attapulgitic, associated with montmorillonite, Droste and Gates (1).

AUTUNITE

Kern County: Additional reference, MacKevett (2) pp. 169-222, with special sections applicable particularly to localities 6, 7, and 8. *9*, Autunite occurs at the Monte Cristo prospect with carnotite, MacKevett (2) p. 213.

Tulare County: 1, Goodwin (1), p. 369 states: "... uranium and thorium-bearing minerals which have been identified in Tulare County include xenotime, euxenite, torbernite, autunite, and uraninite."

BASTNAESITE

San Bernardino County: 1, Additional reference, Glass et al. (5).

BERTHIERITE

Kern County: 1, Berthierite is reported as fibrous material associated with colemanite from Boron, Pemberton et al. (1) p. 34.

BETA-URANOTIL

San Bernardino County: 1, Beta-uranotil is reported with uranophane from the New Method mine (Hope uranium prospect) Bristol Mts., near Amboy, Chesterman and Bowen (6) p. 1679.

BINDHEIMITE

Inyo County: 3, Bindheimite is mentioned in a listing of minerals from the Darwin district, Hall and MacKevett (1) p. 16.

BISMUTH

Inyo County: 3, Native bismuth is reported in the silver ore from the Thompson mine, Darwin district, Hall and MacKevett (1) p. 17.

BISMUTHINITE

Inyo County: 2, Hall and MacKevett (1) p. 63 report crystals of bismuthinite up to two inches long in calcite from the Fernando mine.

BISMUTITE

Inyo County: 4, Pseudomorphs of bismutite after bismuthinite are reported from the Fernando mine, Hall and MacKevett (1) p. 63.

BLÖDITE

Inyo County: 1, Blödite is found as a constituent of saline crusts in Deep Spring Lake, B. F. Jones (1) p. B200.

BOLTWOODITE

Potassium uranyl silicate, near $K_2(UO_2)_2(SiO_3)_2(OH)_2 \cdot 5H_2O$

Orthorhombic or monoclinic. Fibers in yellow wartlike aggregates on fractures in sandstone. G. about 3.6. Weakly fluorescent in dull green under both long- and short-wave ultraviolet. Occurs as an oxidation product of primary black uranium ores.

San Bernardino County: 1, Boltwoodite is found very sparingly in the New Method mine (Hope uranium prospect), 6 miles east of Amboy, and 3 miles north of Highway U. S. 66 on the road to Kelso. Uranophane is also found from this property, but it is not in association with boltwoodite, W. C. Oke (p.c. '61). Boltwoodite was first identified at the Delta (Pick's) mine, Emery County, Utah, in 1956.

BOULANGERITE

Santa Cruz County: 1, Boulangerite occurs at the Pacific Limestone Products (Kalkar) quarry near Santa Cruz, E. H. Oyler (p.c. '60).

BRANNERITE

Plumas County: 1, Brannerite in broken crystals is associated with gold at the Little Nell property (SE $\frac{1}{4}$ sec. 35, R. 8 E., T. 23 N., M. D.), Pabst and Stinson (18) p. 2071.

BRAUNITE

Trinity County: 2, Braunite occurs with other manganese minerals including rhodonite, bementite, and rhodochrosite in a deposit (sec. 26, T. 30 N., R. 12 W., M. D.) in sediments, Hewett et al. (6) p. 45.

BROCHANTITE

Inyo County: 3, Brochantite is found in oxidized copper ores in the Darwin district, Hall and MacKevett (1) p. 18.

BRUCITE

San Benito County: 1, Near the Florence Mack mine, brucite occurs as crusts of minute flat crystals on long slender calcite, in serpentine, E. H. Oyler (p.c. '59).

BURKEITE

Inyo County: 1, Burkeite occurs in muds, and as efflorescences and saline crusts at Deep Spring Lake, B. F. Jones, (1) p. B200.

CARLOSITE

See neptunite

CARNOTITE

Kern County: 5, Carnotite may occur with autunite in the ores of the Miracle mine, MacKevett (2) p. 211. *6*, Carnotite with autunite occurs coating calcite crystals, in vugs and veins from the Monte Cristo prospect, Kern River uranium area, MacKevett (2) p. 213.

CERARGYRITE

Inyo County: 3, Cerargyrite was found as euhedral crystals in the Lee mine, Darwin district, Hall and MacKevett (1) p. 18.

CERITE

San Bernardino County: 1, Additional reference, Glass et al. (5)

CHABAZITE

San Bernardino County: 1, Showy complex crystals and simple rhombohedrons of chabazite occur near Amboy Crater, Robert Patterson (p.c. '56).

CHALCOCITE

Inyo County: 5, Chalcocite is reported with covellite as a constituent in small quantities in the silver-lead ores from the Darwin district, Hall and MacKevett (1) p. 18.

CHLORITE

Penninite

Monterey County: 2, Kämmererite with uvarovite and chromite occurs at the South Slope mine, CDMG (21738). This may be the same as locality 1.

*** CHROMRUTILE, 1928**
(Discredited species)

Nevada County: 1, The mineral from the Red Ledge mine identified as chromrutile has been determined by x-ray study, Strunz (1), to be a magnesium chromium titano-silicate, not a chrome-bearing rutile, and has been renamed "redledgeite."

CINNABAR

Lassen County: 1, Cinnabar occurs with metacinnabar from Amedee Hot Springs, Dickson and Tunell (1), p. 484.

CLAUSTHALITE

Lead selenide, PbSe

Isometric. Massive granular. Cubic cleavage good. H. 2½-3; G. 7.8. Color lead-gray. Luster metallic. Streak dark lead-gray. Soluble in HNO₃. Easily fusible and largely volatile; decrepitates in closed tube.

Inyo County: 1, Clausthalite is doubtfully reported in galena from the Darwin district, Hall and MacKevett (1) p. 17.

CLINOHUMITE

Monterey County: 1, Clinohumite is associated with geikielite in magnesian marbles in the Santa Lucia Mts., Wise (1).

CLINOPTILOLITE

San Bernardino County: 1, Clinoptilolite is reported associated with hectorite in the montmorillonite and saponite in the North Group of claims, six miles northwest of Hector Station on the Santa Fe Railroad east of Barstow, Ames et al. (1) p. 28.

COLEMANITE

Inyo County: 6, The atomic structure was determined on colemanite from Meyerhofferite Tunnel, Twenty Mule Team Canyon, Christ et al. (3).

CONNELLITE

Madera County: 1, Connellite occurs at the Buchanan mine, E. H. Oyler (p.c. '59), and CDMG (21703).

COPIAPITE

Kern County: 1, Copiatite is reported as efflorescence in yellow balls as coatings at the California Borate property, Kramer Borate district, G. I. Smith et al. (1) p. 1074, Pemberton et al. (1) p. 38.

COVELLITE

Inyo County: 2, Covellite occurs in some of the sulfide ores of the Darwin district, Hall and MacKevett (1) p. 18.

CREEDITE

Inyo County: 1, Creedite is reported from the Anaconda mine, Darwin district, Hall and MacKevett (1) p. 18. This confirms C. A. Noren (p.c. '54).

CROCOITE

Inyo County: 1, The occurrence of crocoite in the Darwin district is confirmed by identification in ores by Hall and MacKevett (1) p. 18.

CYANOTRICHITE

Basic hydrous copper aluminum sulfate
 $\text{Cu}_4\text{Al}_2(\text{SO}_4)(\text{OH})_{12}\cdot 2\text{H}_2\text{O}$

Orthorhombic. As plush- or wool-like groupings of crystals and coatings. Silky luster. Color sky- to azure-blue. Streak pale blue. G. 2.74-2.95. Soluble in acids.

San Bernardino County: 1, A specimen of cyanotrichite in the California Division of Mines and Geology Mineral Exhibit CDMG (21704) is from Clark Mountain.

CYRTOLITE

See zircon

Riverside County: 2, Cyrtolite occurs with monazite and xenotime in pegmatite, 4 miles east of Nuevo, Charles Seward (p.c. '60).

DATOLITE

Riverside County: 1, Additional reference, Anonymous (42), p. 462.

DAVIDITE

Pabst and Thomssen (17) report hexagonal crystallization in metamict occurrence from Arizona which establishes davidite as a distinct species.

DEWEYLITE

Inyo County: 1, Deweylite is mentioned by Hall and MacKevett (1) p. 16 as a gangue mineral of the ores of the Darwin district.

DIGENITE

Cuprous sulfide, $\text{Cu}_{1-x}\text{S}_2$, where $x = 0.8$ to 1.5

Isometric. Usually massive. Cleavage octahedral. H. $2\frac{1}{2}$ -3. G. 5.54-5.706. Color blue to black. Associated with chalcocite, and distinguished from it on the polished surface by bluer color and octahedral cleavage developed by etching with HNO_3 .

San Benito County: 1, Small crystals of digenite associated with neptunite and benitoite, from the Dallas Gem mine, have been identified by x-ray methods, R. E. Desautels, U.S. Natl. Mus. (p.c. '59).

DUMORTIERITE

San Diego County: 1, Spectroscopic analysis of a specimen of dumortierite probably from this locality shows only trace elements besides the normal principal ones, Hey and Claringbull (2) p. 902. Previous analyses (1902, 1905) showed a noteworthy amount of titanium in addition to the normal principal constituents.

ENARGITE

Inyo County: 1, Enargite may occur with famatinite as a constituent of the silver ore from the Thompson mine, Darwin district, Hall and MacKevett (1) p. 17.

EPSOMITE

Los Angeles County: 3, Epsomite occurs on the face of the cliff at Bluff Cove, Palos Verdes, Herzog (p.c. '56). This may be the same as locality 1.

ETTRINGITE

Hydrous basic calcium aluminum sulfate,
 $\text{Ca}_6\text{Al}_2(\text{SO}_4)_3(\text{OH})_{12}\cdot 26\text{H}_2\text{O}$

Hexagonal. Small hexagonal crystals occasionally terminated by base. Cleavage, prismatic perfect. Colorless, but often altered to white fibrous material. H. 2- $2\frac{1}{2}$. G. 1.77. Partly soluble in water, giving an alkaline solution; easily soluble in acids.

Riverside County: 1, Ettringite is reported from Crestmore, as a vein filling in massive contact rock from the Commercial quarry, Murdoch and Chalmers (37). This occurrence was originally described as that of a new mineral "woodfordite", Murdoch and Chalmers (36), but the name has been withdrawn since the identity with ettringite is established.

EUXENITE

Kern County: 2, Euxenite occurs in a few pegmatite dikes in small crystals in the Kern River uranium area, MacKevett (2) pp. 191, 197.

Tulare County: 1, Goodwin (1) p. 369 states: "... uranium and thorium-bearing minerals which have been identified in Tulare County include xenotime, euxenite, torbernite, autunite and uraninite."

FAMATINITE

Luzonite

Inyo County: 1, Additional reference, Hall and MacKevett (1) p. 17.

Shasta County: 1, Luzonite is reported from two specimens in the ores of the East Shasta Copper-Zinc district, Albers and Robertson (3), p. 71.

FERGUSONITE

San Diego County: 1, Two specimens of fergusonite from southwest slope of Lawson Peak (sec. 1, T. 17 S., R. 2 E., S. B.) were presented to the California State Division of Mines and Geology CDMG (21701-21702).

FLUOBORITE

Basic magnesium borate, $Mg_3(BO_3)(F,OH)_3$

Hexagonal, crystals usually simple prisms. Colorless. No good cleavage. H. $3\frac{1}{2}$. G. 2.98. Easily soluble in acids.

Riverside County: 1, Fluoborite occurs at the Crestmore quarries, 910 ft. level, Segnit (p.c. '61).

San Bernardino County: 1, In a contact zone fluoborite occurs as abundant sub-parallel prismatic crystals in matrix of calcite at the New Method mine (Hope uranium prospect), Bristol Mts., near Amboy, Chesterman and Bowen, (6) p. 1678.

FRANCKEITE

Inyo County: 1, Franckeite was identified by Charles Milton of the U.S. Geological Survey from a rich silver ore body from the Thompson mine, Darwin district, Hall and MacKevett (1) p. 17.

FOSHAGITE

Riverside County: 1, Crystal structure of foshagite was worked out on material from Crestmore district, Taylor and Gard (7 and 8).

GAY-LUSSITE

Inyo County: 1, Gay-Lussite is reported by B. F. Jones (1) p. B200 from muds of Deep Spring Lake.

GEIKIELITE

Monterey County: 1, The second occurrence of geikielite in the state is reported from highly metamorphosed magnesian marbles in the Santa Lucia Mts., in place, as grains associated with spinel, clinohumite, and other minerals, Wise (1).

GILLESPIE

Mariposa County: 1, Additional data are given by Pabst (16).

GLAUBERITE

Imperial County: 1, Berkholz (18) reports glauberite from the Salton Sea, confirming Murdoch (p.c. '45).

Inyo County: 3, Glauberite is reported from saline crusts and efflorescences from Deep Spring Lake, B. F. Jones (1) p. B200.

GOSLARITE

Inyo County: 1, Goslarite is mentioned as a component of silver-lead ores in the oxidized zone from the mines of the Darwin district, Hall and MacKevett (1) p. 18.

*** GOWERITE, 1959**

Hydrous calcium borate, $CaO \cdot 3B_2O_3 \cdot 5H_2O$

Monoclinic(?). Crystals long prismatic to needlelike in radiating globular clusters. H. 3. G. 2.00. Colorless, in aggregates white. Difficultly soluble in cold water, moderately in hot.

Inyo County: Several occurrences of gowerite have been noted in the Death Valley region: 1, Mott open cut colemanite prospect, Furnace Creek deposits, Erd et al. (1) p. 912; *2*, Hard Scramble claim on the

west slope of foothills of Black Mts., west of Ryan, Erd et al. (1) p. 912; **3**, 1.4 miles S. 43° E. of the Mott open cut prospect, Erd, et al. (1) p. 912; and **4**, 3000 ft. N. 72° W. of Ryan, Erd et al. (1) p. 912. See also Christ and Clark (6).

GUANAJUATITE

Bismuth selenide, Bi_2Se_3

Orthorhombic. Crystals acicular, striated lengthwise; also massive. Two cleavages, fair. Somewhat sectile. H. $2\frac{1}{2}$ - $3\frac{1}{2}$. G. 6.25-6.98. Luster metallic. Color, bluish gray; streak shiny gray. Soluble in aqua regia.

Inyo County: **1**, Irregular white inclusions (microscopic) in franckite from silver ore of the Thompson mine, Darwin district, are probably guanajuatite, Hall and MacKevett (1) p. 17.

GUMMITE

Kern County: **6**, Gummite was reportedly mined from the Miracle mine in the Kern River uranium area, MacKevett (2) p. 211.

* HAIWEEITE, 1959

Hydrous calcium uranium silicate, $\text{CaO} \cdot 2\text{UO}_3 \cdot 6\text{SiO}_2 \cdot 5\text{H}_2\text{O}$

Monoclinic (?). Minute rosettes of blades, coatings. H. $3\frac{1}{2}$. G. 3.35. Luster pearly. Color pale yellow. Identified by x-ray powder pattern. Usually associated with metahaiweeite.

Inyo County: **1**, Haiweeite is described from the Coso Mts. near the Haiwee Reservoir, as spherulitic aggregates on fracture surfaces in granite, McBurney and Murdoch (1), CDMG (21739).

HAMBERGITE

San Diego County: **1**, New analysis of hambergite from the Little Three mine near Ramona, shows up to 6% fluorine, Switzer et al. (10), p. 1987, CDMG (21706). **2**, A second occurrence of this rare mineral at the Himalaya mine near Mesa Grande is reported by Switzer et al. (10) p. 1987.

HAUSMANNITE

Trinity County: **2**, Hausmannite occurs with tephroite at the Lucky Bill (Old Bill) prospect (sec. 9, T. 28 N., R. 11 W., M. D.), Hewett et al. (6) p. 45.

Nevada County: **1**, It occurs with tephroite at the Manga-Chrome (Duggan) mine (sec. 17, T. 14 N., R. 8 E., M. D.) Hewett et al. (6) p. 47; and **2**, at the Smith prospect (center sec. 2, T. 14 N., R. 8 E., M. D.) Hewett et al. (6) p. 48.

Mariposa County: **1**, It occurs with tephroite and bementite at the Caldwell (Daly) mine ($\text{NE}\frac{1}{4}$ sec. 14, T. 3 S., R. 15 E., M. D.) Hewett et al. (6) p. 51.

HEULANDITE

Kern County: **1**, Heulandite occurs as small tabular crystals in cavities in lava at Red Rock Canyon, Murdoch (p.c. '61).

San Bernardino County: **1**, It occurs with chabazite in simple showy rhombohedral crystals near Amboy Crater, Robert Patterson (p.c. '56).

HOMILITE

Iron calcium borosilicate, $\text{FeCa}_2\text{B}_2\text{Si}_2\text{O}_{10}$

Monoclinic. Crystals with near octahedral habit. Color brownish black to black; nearly opaque. H. 5. G. 3.28. Soluble in HCl. A member of the gadolinite group.

A specimen of homilite from California (Loc. un cited) was identified in 1957 by California Div. Mines laboratory, Jenkins (4) p. 50.

HUNTITE

Magnesium calcium carbonate, $Mg_3Ca(CO_3)_4$

Orthorhombic (from x-ray study). Compact granular. Color white.

Identified by x-ray powder pattern.

Riverside County: 1, Huntite is noted as an incrustation on monticellite rock from Crestmore, Carpenter (1).

HYDROBORACITE

Kern County: 1, Hydroboracite from "the pit" at Boron occurs as fibrous crystalline masses but rare, Pemberton et al. (1) p. 29.

ILSEMANNITE

Kern County: 1, Ilsemaninite was identified in sooty uraninite masses from the Kern River uranium area, MacKevett (2) p. 203.

INDERITE

Kern County: 1, 2, Additional reference, Schaller and Mrose (56).

INYOITE

Kern County: 1, Inyoite is reported from the Kramer district, Boron, rare but in fine single crystals. Pemberton et al., (1) p. 25.

IRON

San Bernardino County: 4, Two specimens of native iron are reported from a reputed new meteorite fall near the California-Arizona border near Needles, Anonymous (38) p. 99.

JAMESONITE

Santa Cruz County: 1, Jamesonite occurs at Pacific Limestone Products (Kalkar) quarry, E. H. Oyler (p.c. '60).

JAROSITE

Shasta County: 1, Jarosite is found in gangue of copper ore, Bully Hill mine, Anonymous (44) p. 4.

JORDISITE

Molybdenum sulfide, $MoS_2(?)$

Amorphous. Black, powdery, colloidal form of molybdenum sulfide.

Kern County: 1, Jordisite is associated with sooty pitchblende (uraninite) and ilsemaninite in the ores from the Kern River uranium area, MacKevett (2) p. 203.

KURNAKOVITE

Kern County: 1, Additional reference, Schaller and Mrose (56).

LAUMONTITE

Tulare County: 1, Veinlets of crystalline laumontite are associated with the scheelite crystal-bearing tactite in the Tyler Creek (Bull Point, Vern Tyler) tungsten mine (N $\frac{1}{2}$ sec. 35, T. 23 S., R. 30 E., M. D.) Goodwin (1) p. 367.

LAWSONITE

Contra Costa County: 2, Lawsonite is found in schists with pumpellyite, on the private estate of Mrs. Anson Blake, Davis and Pabst (1) p. 692.

Marin County: 1, X-ray crystallography of lawsonite is reported by Pabst in Davis and Pabst (1) p. 697.

Sonoma County: 6, A specimen of lawsonite was identified from Buckeye Creek, CDMG (21737).

LIBETHENITE

Basic copper phosphate, $\text{Cu}_2(\text{PO}_4)(\text{OH})$

Orthorhombic. Short prismatic crystals, usually poor. No good cleavage; H. 4. G. 3.93-3.95. Color light to dark green. B. B. fuses to a black crystalline bead. Soluble in acids and in ammonia.

San Benito County: 1, Libethenite is found in glaucophane schist, $4\frac{1}{2}$ miles north of Llanada, E. H. Oyler (p.c. '59).

LUDWIGITE

Fresno County: 2, Ludwigite occurs at Kaiser Peak, on the north side of Kaiser Ridge, Chesterman (7) p. 1712.

Riverside County: 1, Additional reference, Schaller and Vlisidis (57).

San Bernardino County: 1, Ludwigite is reported by Lamey (10), p. 673, from the Cave Canyon iron deposit, northeast of Yermo. **2**, It occurs at Lava Bed iron deposit, south of Newberry Springs, Lamey (10) p. 673.

MARGARITE

Riverside County: 1, Margarite is reported in contact rock with mineral "Z" at Crestmore, Ettinger (p.c. '59).

MATILDITE

Silver bismuth sulfide, AgBiS_2

Orthorhombic(?). Massive, or rarely as indistinct prismatic crystals. No cleavage. Color iron black. Streak light gray. Luster metallic. H. $2\frac{1}{2}$. G. 6.9. Fusibility, 1. Soluble in HNO_3 with separation of sulphur.

Inyo County: 1, Tiny lamellar oriented inclusions in steel gray galena from the Essex mine, Darwin district, are probably matildite, Hall and MacKevett (1) p. 17.

MELANTERITE

Inyo County: 1, Melanterite was identified as a component of silver-lead ores from the oxidized zone in the Darwin district, Hall and MacKevett (1) p. 18.

* **METAHAIWEEITE, 1959**

Hydrous calcium uranium silicate,
 $\text{CaO} \cdot 2\text{UO}_3 \cdot 6\text{SiO}_2 \cdot ?\text{H}_2\text{O}$

Related to haiweeite as metatorbernite is to torbernite. For characteristics, see haiweeite.

Inyo County: 1, Spherulites of the new mineral haiweeite described by McBurney and Murdoch (1) p. 840, have inner cores of material having a higher index of refraction. Thus an identical relation to that of torbernite to metatorbernite is suggested where difference in water content exists. The inner spheres are tentatively identified as the new mineral metahaiweeite, CDMG (21739).

METACINNABAR

Lake County: 6, Metacinnabar is reported from the northeast corner of the main dump, Sulphur Bank mine, CDMG (21744).

Lassen County: 1, Metacinnabar occurs as thin coatings on calcareous tufa and lake sediments at Amedee Hot Springs, Dickson and Tunell (1) p. 484.

METAZEUNERITE

Kern County: 1, MacKevett (2) p. 205, suggests that arsenic and copper in the analyses of the uranium ores of the Kern River uranium area may be from metazeunerite in the ores. **2**, Metazeunerite is reported from the Little Sparkler prospect, Kern River uranium area, MacKevett (2) p. 214.

METEORITE

See iron

MEYERHOFFERITE

Kern County: 1, Meyerhofferite, pseudomorphous after inyoite, is found in the deposits at Boron, Pemberton, et al. (1) p. 27.

MIMETITE

Riverside County: 1, Minute yellow needles of mimetite are found on fracture surface of pegmatite, Commercial quarry 910 ft. level, Crestmore, Murdoch (p.c. '59).

MIRABILITE

Kern County: 1, Mirabilite is deposited as white coatings where moisture seeped through mine walls at the California borate property, Kramer borate district, G. I. Smith et al. (1) p. 1074, Pemberton et al. (1) p. 38.

MONAZITE

Riverside County: 1, Additional reference, Patchick (3). **12**, Well-formed crystals of monazite occur with cyrtolite and xenotime in pegmatite, 4 miles east of Nuevo, Charles Seward (p.c. '60).

MONTMORILLONITE

San Bernardino County: 2, A comprehensive review of the hectorite locality is provided in Ames, et al. (1) pp. 22-37. Infra-red spectra of this mineral from the type locality show isomorphous substitution of lithium for magnesium, and fluorine for hydroxyl, Farmer (1) p. 858.

MONTROYDITE

San Benito County: 1, Bladed crystals of montroydite on mercury globules in cavities are reported from Clear Creek, E. H. Oyler (p.c. '59).

MOTTRAMITE

Basic copper, zinc, lead vanadate,
 $(\text{Cu,Zn})\text{Pb}(\text{VO}_4)(\text{OH})$

Orthorhombic. Habit variable. Commonly in pyramidal or prismatic crystals; drusy crusts, or massive. No cleavage. Luster greasy. Color variable, usually shades of brown, red or green. Streak orange to brownish red, or yellowish. H. 3-3½. G. 5.9. B. B. easily fusible. Easily soluble in acids.

Riverside County: 1, The yellow-green coatings (probably Mineral "N" of Woodford) at Crestmore (Lone Star and other locations), are mottramite, Murdoch (p.c. '61).

NAHCOLITE

Inyo County: 1, Nahcolite was identified from the muds of Deep Spring Lake, B. F. Jones (1) p. B200.

NEPTUNITE

Neptunite was erroneously identified and named carlosite, Louderback and Blasdale (2) (Reference in Bulletin 173.)

NICCOLITE

Inyo County: 1, Niccolite is reported from Long Lake, on head of Bishop Creek, C. D. Woodhouse (p.c. '60).

* NOBLEITE, 1961

Hydrous calcium borate, $\text{CaO} \cdot 3\text{B}_2\text{O}_3 \cdot 4\text{H}_2\text{O}$

Monoclinic. Mammillary coatings or platy crystals. Color white or colorless. Sectile. Flexible in thin crystals; inelastic. One perfect cleavage parallel to plates. H. 3. G. 2.09.

Inyo County: 1, Nobleite occurs in seven places in Death Valley. It is found at Corkscrew Canyon, Ryan, and other well known areas associated with the other borates of the region, Erd, et al. (2).

OLIVENITE

Basic arsenate of copper, $\text{Cu}_2(\text{AsO}_4)(\text{OH})$

Orthorhombic. Crystals elongate, short prismatic, acicular, globular and reniform. Cleavage indistinct. Fracture conchoidal. Luster adamantine to vitreous. Color olive-green; also greenish brown and brown. Streak, olive-green to brown. H. 3. G. 3.9-4.6. B. B. easily fusible. Soluble in acids and ammonia.

A specimen of olivenite, submitted from California (locality uncited), was identified in 1957 by the California Div. Mines laboratory, Jenkins (4) p. 50.

ORPIMENT

Kern County: 2, Orpiment occurs with realgar at Boron in borate minerals, Pemberton et al. (1) p. 33.

PARAVEATCHITE

Hydrous strontium borate, $\text{Sr}_3\text{B}_{16}\text{O}_{27} \cdot 5\text{H}_2\text{O}$

Chemically the same as veatchite. Distinguished from it by orientation of cleavage.

Los Angeles County: 1, Paraveachite occurs at the Sterling borax mine. Crystals of "veatchite" originally described by Murdoch (7) have been shown by J. R. Clark and Mrose (4) to be identical with paraveatchite described by Braitsch (1) and with different crystallography from the original veatchite from Lang, Switzer (2). Thus, both forms, veatchite and paraveatchite occur at Lang.

PEROVSKITE

Riverside County: 2, Minute deep red grains of perovskite associated with chondrodite and spinel occur in contact zone at New City quarry (Victoria Ave.) D. Morton (p.c. '59).

San Benito County: 1, Colorless and honey-colored octahedral crystals of perovskite associated with melanite garnet occur one mile from Dallas Gem mine, Murdoch (p.c. '61). This is the same locality as the black cubic crystals, 1.

PIEDMONTITE

Los Angeles County: 1, Additional reference, Ehlig (1).

PIRSSONITE

Inyo County: 1, Pirssonite occurs with other saline minerals as efflorescences. from Deep Spring Lake, B. F. Jones (1) p. B200.

POWELLITE

Inyo County: 4, Powellite is reported on scheelite as greenish-yellow crusts, Anonymous (41) p. 304.

PREHNITE

Riverside County: 3, Prehnite occurs in small vugs with quartz in a pegmatite dike in Bautista Canyon, Filer (p.c. '61).

PUMPELLYITE

Contra Costa County: 1, Pumpellyite is found in schists with lawsonite on the private estate of Mrs. Anson Blake; Davis and Pabst (1) p. 692.

PYROXENES**Diallage**

Trinity County: 1, Diallage is reported from T. 40 N., R. 6 W., M.D., CDMG (21708).

PYROXMANGITE

Iron manganese silicate, $(\text{Fe}, \text{Mn})\text{SiO}_3$

Triclinic. Cleavable masses. One fair cleavage. Color yellowish to deep brown. H. $5\frac{1}{2}$. G. 3.8. Fusibility, 3. Insoluble in acids.

Kern County: 1, Pyroxmangite occurs in the contact zone of manganese ores at the Big Indian deposit two miles south of Randsburg (sec. 11, T. 30 S., R. 40 E., M. D.) as small yellowish grains in quartzite, Hewett, et al. (6) p. 54.

QUARTZ

Kern County: 4, Rose quartz is reported from the western slope of Breckenridge Mt., Paul (1).

Napa County: 3, Crystals of quartz in float from lava flow are found on the H and M Ranch, north of the ranch house, on the flat above Putah Creek, Nelson (1).

*** REDLEDGEITE, 1961**

Titano-silicate of magnesium and chromium,



Tetragonal. Crystals prismatic or equant. Color black. Luster brilliant. H. $6\frac{1}{2}$. G. 3.72.

Nevada County: 1, The Red Ledge mine in the Washington district contributed some unusual brilliant black crystals with chromite and kämmererite which were described in 1928 as the new mineral chrom-rutile. Strunz (1) has shown the identification to be incorrect, and that the crystals are a new species to which the name "redledgeite" is assigned. The small brilliant black crystals, with kämmererite on chromite at the Red Ledge mine were originally described by Gordon and Shannon (1) p. 69. See also W. W. Bradley (29) p. 69 and Palache et al. (10), p. 560. (These references are found in Bulletin 173, and are not repeated in this supplement). Strunz (1) has shown, by x-ray studies, that redledgeite is a definite mineral and not an impure chromian rutile.

Analysis

CaO	MgO	Al ₂ O ₃	Fe ₂ O ₃	Cr ₂ O ₃	SiO ₂	TiO ₂	Ign. Loss	
0.76	5.52	0.57	0.80	16.61	5.51	69.71	1.48	= 100.96

RÖMERITE

San Benito County: 1, Römerite occurs as stalactitic masses in the Stayton mine, Lone Tree, two miles south of Antimony Peak near Hollister, Anonymous (39) p. 195.

SANBORNITE

Fresno County: 1, Sanbornite occurs at Rush Creek, Big Creek mining district, CDMG (21751).

Mariposa County: 1, Douglass (1) shows sanbornite which was originally discovered in California to be orthorhombic in crystallization instead of triclinic as first described.

SASSOLITE

Kern County: 1, Sassolite occurs as thin, small, colorless flakes as crystals in the California Borate Company property (Western Borax mine of earlier references) with other borate minerals, G. I. Smith et al. (1). **2**, It is found as an efflorescence at the exposed contact of shale and basalt in the Pacific Coast Borax Company mine, Kramer borate district, G. I. Smith et al. (1) p. 1070.

Sonoma County: 1, Sassolite is reported by R. L. Smith (1) p. 1204 in a specimen collected from The Geysers.

SBORGITE

Hydrous sodium borate, $\text{Na}_2\text{O} \cdot 5\text{B}_2\text{O}_3 \cdot 10\text{H}_2\text{O}$

Triclinic. Sugary textured crystal aggregates, stalactitic. Colorless. Soft. G. 1.71.

Inyo County: 1, Sborgite is found at three separate places in Twenty Mule Team Canyon, as surficial growths by alteration from other borate minerals, McAllister (7).

SCAWTITE

Riverside County: 1, Additional reference, Murdoch and McConnell (34).

SCHEELITE

Inyo County: 5, Additional reference, Davis and Peterson (1).

Tulare County: 5, Goodwin (1) p. 336-367, 369, describes the Tyler Creek occurrence, including diagrams of the scheelite crystals ($\text{N}\frac{1}{2}$ sec. 35, T. 23 S., R. 30 E., M. D.).

*** SCHUETTEITE, 1959**

Basic mercury oxy-sulfate, $\text{HgSO}_4 \cdot 2\text{HgO}$

Hexagonal. Coatings of microscopic platy crystals on cinnabar exposed to sunlight; also as thicker crusts on dumps of burnt ore and bricks from mercury furnaces. Color canary yellow. H. 3(?). G. 8.18.

Lake County: 1, Schuetteite occurs as coatings on cinnabar-bearing basalt at the Sulfur Bank mine, Bailey et al. (10) p. 1034. Several localities of artificially formed schuetteite are also reported in California, Bailey et al. (10).

SEARLESITE

Kern County: 1, Searlesite is cited as an associate of sassolite and probertite at the California Borate Company mine, Kramer borate district, G. I. Smith et al. (1) p. 1070, Pemberton et al. (1) p. 31.

SERENDIBITE

Riverside County: 2, It occurs at Commercial quarry, Crestmore as irregular grains in calcite and colorless idocrase (?), D. Morton (p.c. '58).

SIDERITE

Riverside County: 2, Siderite occurs at Crestmore, underground, as honey-colored rhombohedrons in cavities, Keller (p.c. '59).

SILVER

Alpine County: 1, Additional reference, Anonymous (1) p. 210.

SPINEL

Santa Barbara County: 1, Nearly perfect crystals of spinel are found in microscopic sizes but quite abundantly in the beach sands of the Santa Barbara coast, Norris and Woodhouse (4) p. 55.

STANNITE

Inyo County: 1, The rich silver ore of the Thompson mine, Darwin district, includes stannite, Hall and MacKevett (1) p. 17.

STERNBERGITE

Silver iron sulfide, AgFe_2S_3

Orthorhombic. Crystals thin plates, lightly striated; rosettes or fan-like aggregates. One perfect cleavage. Plates flexible. Color pinchbeck brown. Streak black. Luster metallic. H. $1-1\frac{1}{2}$. G. 4.1-4.2. Easily fusible on charcoal, giving off sulphur.

Riverside County: 1, The Colorado School of Mines has identified sternbergite in material collected from Crestmore (p.c. '61).

STIBICONITE

San Benito County: 1, Additional reference, Anonymous (39) p. 195.

STIBNITE

Contra Costa County: 1, Stibnite occurs as fine thread-like crystals associated with valentinite at the Mount Diablo quicksilver mine. E. H. Oyler (p.c. '61). Supports N.R. (no record) in Bull. 173.

STILPNOMELANE

Kern County: 1, Stilpnomelane is reported by Hewett et al. (6) p. 54, in the manganese ores of the Big Indian deposit (sec. 11, T. 30 S., R. 40 E., M. D.).

STOLZITE

Inyo County: 1, The validity of this occurrence of stolzite listed in Bull. 173 is questioned, since study of ore which appears to be from the Darwin locality shows no stolzite, but only scheelite, Hall and MacKevett (1) p. 59.

SYLVITE

Potassium chloride, KCl

Isometric. Usually massive, crystals cubic. Colorless. Luster vitreous. H. 2. G. 1.99. Taste more bitter than halite.

Inyo County: 1, Sylvite was identified in saline crusts and from efflorescences in Deep Spring Lake, B. F. Jones (1) p. B200.

TEPHROITE

Amador County: 1, Tephroite occurs with other manganese minerals including alleghanyite at the Germolis prospect near Fiddletown ($\text{SE}\frac{1}{4}$, sec. 9, T. 7 N., R. 11 E., M. D.), Hewett et al. (6) p. 49. **2**, It is in nodules with other manganese ores at the Lubanko prospect ($\text{SE}\frac{1}{4}$ sec. 10, T. 7 N., R. 11 E., M. D.). Alleghanyite is also associated with it. Hewett, et al. (6) p. 49.

Butte County: 1, 2, Tephroite was observed in specimens from the Benet prospect (sec. 34, T. 20 N., R. 7 E., M. D.) and the nearby Bear Canyon mine ($\text{S}\frac{1}{2}$ sec. 34, T. 20 N., R. 7 E., M. D.), with other manganese minerals, Hewett et al. (6) p. 45-46.

Calaveras County: 1, Tephroite occurs in the Kellogg mine (sec. 4, T. 2 N., R. 12 E., M. D.) seven miles west of Altaville, Hewett et al. (6) p. 51.

Kern County: 1, It occurs in the Big Indian manganese deposit (sec. 11, T. 30 S., R. 40 E., M. D.) two miles south of Randsburg, Hewett et al. (6) p. 52, CDMG (21736).

Mariposa County: 1, Microcrystals of plumose tephroite occur with bementite and other manganese minerals at the Caldwell (Daly) mine (NE $\frac{1}{4}$ sec. 14, T. 3 S., R. 15 E., M. D.), six miles southwest of Coulterville and one mile north of the Merced River, Hewett et al. (6) p. 51.

Nevada County: 1, Tephroite was observed in the ores of the Manga-Chrome (Duggan) mine (sec. 17, T. 14 N., R. 8 E., M. D.), Hewett et al. (6) p. 47. **2**, It occurs on the dumps with hausmannite at the Smith prospect (center sec. 2, T. 14 N., R. 8 E., M. D.), Hewett et al. (6) p. 48.

Siskiyou County: 1, Tephroite is found in the National Defense manganese claim (sec. 16, T. 40 N., R. 10 W., M. D.) in quartzite, Hewett et al. (6) p. 44.

Trinity County: 1, It also occurs at the Lucky Bill (Old Bill) property with hausmannite (sec. 9, T. 28 N., R. 11 W., M. D.), Hewett et al. (6) p. 45.

THENARDITE

Kern County: 2, Thenardite is reported from the California borate mine (Western Borate mine of earlier references), Pemberton et al. (1) p. 38.

THERMONATRITE

Inyo County: 2, Efflorescences from Deep Spring Lake contain thermonatrite, B. F. Jones (1) p. B200.

THOMSONITE

Riverside County: 1, Thomsonite occurs as clusters of prismatic and bladed crystals in cavities in quartz and prehnite from 910 level, Commercial quarry, Crestmore, Murdoch (p.c. '59).

TORBERNITE

Tulare County: 1, Goodwin (1) p. 369 states: "... uranium and thorium-bearing minerals which have been identified in Tulare County include xenotime, euxenite, torbernite, autunite, and uraninite." Specific localities are not given, and torbernite is not heretofore reported from this county.

TOURMALINE

Marin County: 1, Brown tourmaline, with quartz in altered Franciscan sediments, and white needles and brown prisms in vugs, occurs at the East Peak of Mt. Tamalpais, Rice (1) p. 2073.

TRONA

Inyo County: 3, Trona occurs as saline crusts and efflorescences from Deep Spring Lake, B. F. Jones (1) p. B200.

* TUNELLITE, 1961

Hydrous strontium borate, $\text{SrO} \cdot 3\text{B}_2\text{O}_3 \cdot 4\text{H}_2\text{O}$

Monoclinic. Individual crystals, usually well formed. Colorless. One perfect cleavage. Luster pearly; on cleavage surface, subvitreous. H. 2 $\frac{1}{2}$. G. 2.4. Thin crystals or cleavage flakes flexible, sectile, inelastic.

Kern County: 1, Tunellite is found at the Jennifer mine, Kramer borate district, Erd et al. (3) p. 294.

Inyo County: 1, It has been identified from the Furnace Creek borate area by McAllister, reported in Erd et al. (3) p. 294.

ULEXITE

Kern County: 2, Additional reference describes a strontian-bearing nonfibrous variety, Allen and Almond (8) p. 169.

URANINITE

Pitchblende

Kern County: 2, Uraninite is reported in several prospects in the Kern River uranium area, MacKevett (2) p. 203, 211.

Tulare County: 1, Goodwin (1) p. 396 states: “. . . uranium and thorium-bearing minerals which have been identified in Tulare County include xenotime, euxenite, torbernite, autunite, and uraninite.”

URANOPHANE

Inyo County: 1, Occurs with haiweeite in fracture coatings on granite. Outerbridge et al. (1) p. 43.

San Bernardino County: 2, Uranophane occurs with fluoborite and beta-uranotil from the New Method mine (Hope uranium prospect), Bristol Mts. near Amboy. Chesterman and Bowen (6) p. 1679.

VALENTINITE

Contra Costa County: 1, Valentinite occurs at the Mt. Diablo mine as clusters of slender colorless needles, with threads of stibnite, E. H. Oyler, (p.c. '61).

VANADINITE

Inyo County: 1, Vanadinite is reported by Hall and MacKevett (1) p. 18; confirms C. D. Woodhouse (p.c. '54).

VEATCHITE

San Bernardino County: 1, Veatchite was identified from drill core No. 5, Four Corners area, Kramer district, collected by Richard C. Erd, and reported by J. R. Clark et al. (1) p. 1142.

WAIRAKITE

Hydrous calcium aluminum silicate, $\text{CaAl}_2\text{Si}_4\text{O}_{12} \cdot 2\text{H}_2\text{O}$

Monoclinic, pseudocubic. Fine-grained massive. G. 2.26. H. $5\frac{1}{2}$ -6.

Fuses easily. Soluble in HCl, yielding gelatinous silica. Distinguished from analcime by x-ray diffraction pattern.

Sonoma County: 1, Wairakite is reported by Steiner (1) from a greywacke fragment erupted from a new steam well at The Geysers. The mineral lines cavities and fractures in the specimen. Wairakite was first described as a mineral in 1955, and this occurrence is the first reported for California.

WEEKSITE

Hydrous potassium uranium silicate, $\text{K}_2(\text{UO}_2)(\text{Si}_2\text{O}_5)_3 \cdot 4\text{H}_2\text{O}$

Orthorhombic. Very fine-grained massive. Soft. G. 4.1. Color yellow. Luster waxy to silky. Seldom found in pure state.

Inyo County: 1, Weeksite occurs at a uranium prospect up slope from the Haiwee Reservoir in the Coso Mts., associated with haiweeite and uranophane, in fracture coatings on granite, Outerbridge et al. (1) p. 43.

WOLFRAMITE

Mono County: 1, Wolframite occurs one mile east of Highway 395 and seven miles north of Mono Lake, CDMG (21709).

*** WOODFORDITE, 1958**
(Discredited species)

Riverside County: 1, This mineral, described from Crestmore as a new mineral by Murdoch and Chalmers (36), has been shown by the same authors (37) to be ettringite.

XANTHOPHYLLITE

Imperial County: 1, Xanthophyllite, variety "zyberdite", is reported from the Turtle Mts., Anonymous (43), p. 22.

XENOTIME

Kern County: 1, Xenotime is reported as a probably primary mineral from the pegmatite dikes in the Kern River uranium area, MacKevett (2) p. 197, 206. This mineral is suggested as the source for the secondary uranium concentrations for the Kern River uranium field, MacKevett, p. 216.

Riverside County: 1, Additional reference Patchick (3). **4**, Xenotime occurs four miles due east of Nuevo as parallel intergrowths with cyrtolite in pegmatite, Charles Seward (p.c. '60).

Tulare County: 1, Goodwin (1), p. 369 states: ". . . uranium and thorium-bearing minerals which have been identified in Tulare County include xenotime, euxenite, torbernite, autunite, and uraninite."

ZIRCON

Riverside County: 2, Zircon crystals of the variety cyrtolite occur in a pegmatite four miles due east of Nuevo, intergrown with xenotime, Charles Seward (p.c. '61). See cyrtolite, this supplement.

Santa Barbara County: 1, It occurs prominently as near-perfect crystals in microscopic sizes in the beach sands in the vicinity of Santa Barbara, Norris and Woodhouse (4) p. 21.

ZINC ANNABERGITE

See annabergite

ZYBERDITE

See xanthophyllite

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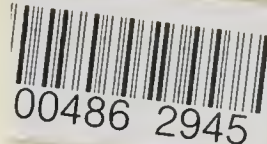
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